Check List the journal of biodiversity data

LISTS OF SPECIES

Check List 11(5): 1758, 4 October 2015 doi: http://dx.doi.org/10.15560/11.5.1758
ISSN 1809-127X © 2015 Check List and Authors

Shore fishes of the Marquesas Islands, an updated checklist with new records and new percentage of endemic species

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Abstract: Expedition Pakaihi I Te Moana was conducted in 2011 to the Marquesas Islands, lying between 07°50′ S and 10°35′ S latitude and 138°25′ W and 140°50′ W longitude. The expedition combined extensive collections and visual censuses of the shore fish fauna. A total of 74 species are added as new records for the Marquesas Islands; the coastal fish fauna of the Marquesas Islands is increased from 415 to 495 species and the number of endemic species is increased from 48 to 68 species. This increases the percentage of species-level endemism for the Marquesas Islands to 13.7%, ranking as the third highest region of endemism for coral reef fishes in the Indo-Pacific. Only two other peripheral regions, the Hawai'ian Islands and Easter Island, have higher values.

Key words: Coral reef fishes; endemism; tropical reefs; species distribution; biodiversity, hotspot.

INTRODUCTION

Tropical reefs represent a high priority for conservation action among marine ecosystems (Roberts et al. 2002). They are known to host some of the most diverse communities in the world with nearly 6,500 species of coral reef fishes (Kulbicki et al. 2013), a diversity that reaches its maximum in the Indo-Malay-Philippine archipelago (Bellwood and Hughes 2001; Roberts et al. 2002; Mora et al. 2003; Reaka et al. 2008; Bellwood and Meyer 2009; Hubert et al. 2012), while peripheral areas of the Indo-Pacific basin host high percentages of endemism. Percentages of endemism change as our knowledge of the reef fish fauna improves and may also vary according to the sizes of the regions considered. The highest percentages of endemism for reef fish in the Indo-Pacific are: 1) Hawai'i with 25% endemism according to Randall (2007); 2) Easter Island with 21.7% (Randall and Cea 2011); 3) Red Sea third with 13.6% (Eschmeyer et al. 2010).

The census of biodiversity constitutes the primary basis for conservation efforts and the establishment of protection measures, as indicated for instance by IUCN red lists. Endemism is often perceived as an important characteristic in species conservation (e.g., Parravicini et al. 2014). Although extensive databases for coral reef fishes are being developed with more accurate taxonomy and geographical distributions (e.g., Randall 2005, 2007; Randall and Cea 2011; Kulbicki et al. 2013), our knowledge of the reef fish fauna still has major gaps due to the isolation of some remote regions or the technical difficulty of studying the reef fish fauna in certain regions of the world. The Marquesas Islands are a prime example. Located in Northeastern French Polynesia between 07°50′ S and 10°35′ S latitude and 138°25′ W and 140°50′ W longitude, they are geographically isolated. To the east, the closest islands are the Galapagos (5 300 km), to the north-west they are 2,200 km from the Line Islands and 3,500 km from Hawai'i. The closest island is in the Tuamotu archipelago some 500 km away. The South Equatorial Current, flowing between 04° N and 17° S from east to west (Wyrtki and Kilonsky 1984; Bonjean and Lagerloef 2002; Gaither et al. 2010), seems to constitute a hydrographical barrier to dispersal leading to the genetic differentiation of some Marquesan populations of otherwise widespread species (Planes and Fauvelot 2002; Winters et al. 2010;

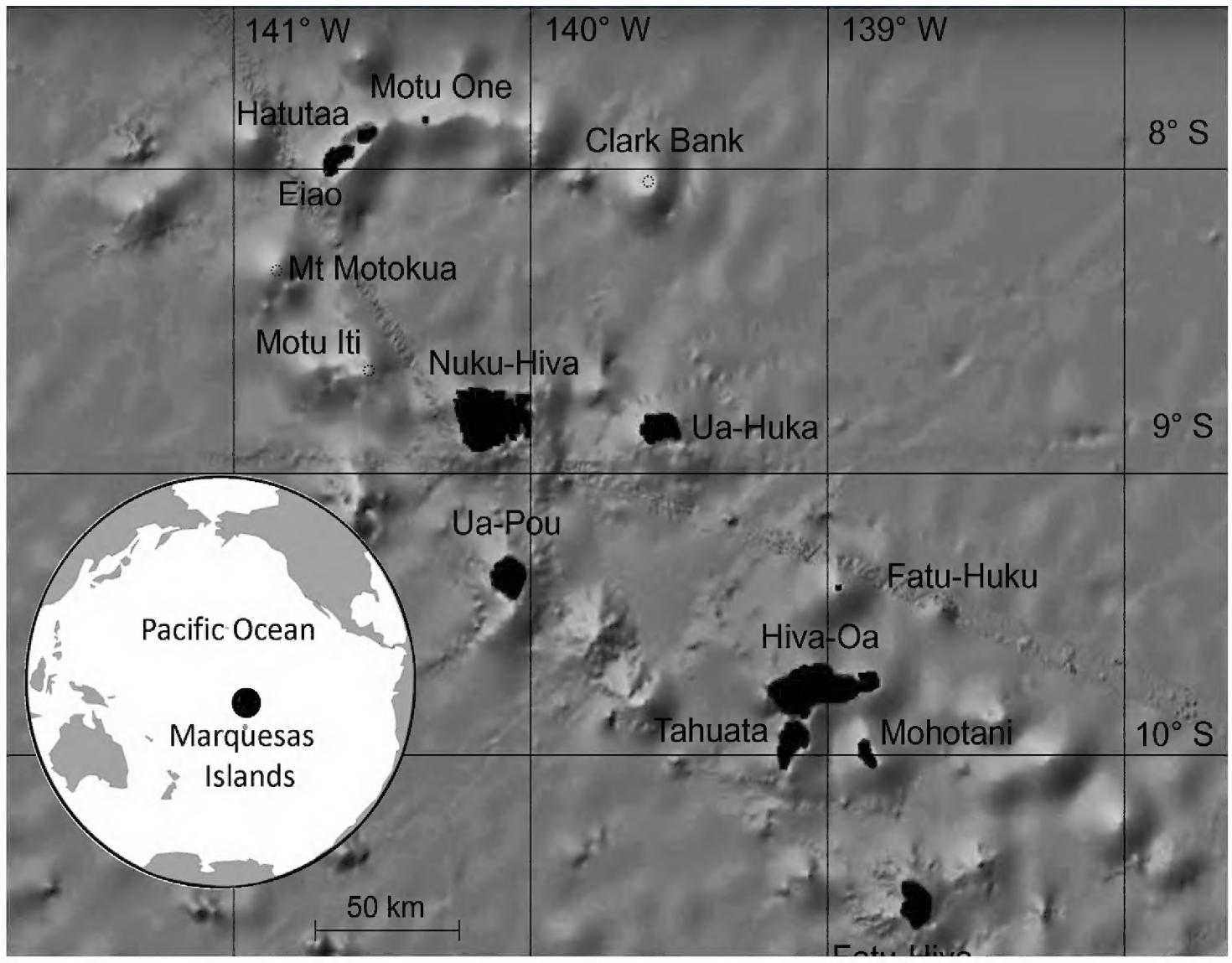

Figure 1. Map of the Marquesas Islands showing the different islands sampled.

Gaither et al. 2010). In addition to the isolation of the Marquesas, their environmental conditions are unique compared to the remainder of French Polynesia. The high islands are not surrounded by lagoons, and coral cover is minimal compared with other parts of French Polynesia. Sea temperatures are unusually variable (26–30°C) for a locality this close to the equator (Randall and Earle 2000) and upwelling of cold enriched waters leads to a general low coral cover and major production of phyto- and zooplankton (Martinez and Maamaatuaiahutapu 2004). All these features give to the archipelago its uniqueness not only within the French Polynesian landscape, but also among Pacific tropical reefs. Selection processes in such a contrasting environment have already been highlighted as a driver of speciation for a Marquesan endemic reef fish species (Gaither et al. 2015).

In 2000, Randall and Earle identified the archipelago as a major hotspot of endemism with 11.6% endemic fish species (Randall and Earle 2000) with only a relatively small portion of the islands having been explored. The present work is based on a compilation of all previous fish records in addition to a preliminary reef fish survey on one island (Mohotani) in 2008 and to the first reef fish survey, which explored all islands of the archipelago in 2011 (expedition Pakai I Te Moana – Nov. 2011).

MATERIALS AND METHODS

Sampling was carried out in 2008 in Mohotani and in 2011 for the first time at every island in the Marquesas (Clark Bank, Motu One, Hatutaa, Eiao, Motu Iti, Nuku-Hiva, Ua-Huka, Ua-Pou, Fatu-Huku, Hiva-Oa, Tahuata, Fatu-Hiva; Figure 1) during a three-week expedition in 2011, aboard the M.V. Braveheart. A diversity of habitats was explored with shallow and deep air dives (down to 50–55 m) for a total of 54 sampled sites. Extensive collections and visual censuses were combined to establish the species composition of shore fishes of the Marquesas Islands. The complementarity of these sampling methods (Williams et al. 2006) allowed us to target different components of the ichthyofauna. Rotenone (powdered root of the Derris plant) allowed us to sample the cryptic and small fish fauna while spear guns and visual censuses allowed us to sample and record larger specimens of species not susceptible to rotenone collecting.

Fishes were identified using identification keys and taxonomic references (Randall 2005; Bacchet et al. 2006) and representative specimens of all species collected were photographed while they had their fresh coloration, sampled for tissues, labeled, and preserved as voucher specimens for the sequences made for a COI Barcode library. Voucher specimens were preserved in 10% formalin (3.7% formaldehyde solution) and later transferred into 75% ethanol. Preserved specimens were cataloged into the fish collection at the Museum Support Center, National Museum of Natural History, Smithsonian Institution, Suitland, Maryland, USA. Underwater visual censuses and underwater photographs allowed us to complete the list of new records. Nomenclature follows Randall (2005) and we followed recent taxonomic changes tracked using the

Catalog of Fishes (http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp, accessed in August 2015). Undescribed new species are listed as sp.

RESULTS

A total of 495 shore fish species in 72 families is reported from Marquesan waters (Table 1) with 74 species reported as new geographic records for the archipelago. Muraenidae (42 species), Labridae (36), Gobiidae (33), Acanthuridae (26) and Serranidae (22) constitute the 5 most speciose families. Among the 495 species, 68 are reported as endemic to the Marquesas Islands, raising the percentage of endemism for the Marquesas Islands to 13.7%. Randall and Earle (2000) recorded numerous species as undescribed species (sp.) and potentially endemic; 16 of them have since been described and are endemic: *Ariosoma multivertebratum* Karmovskaya 2004, *Scorpaenopsis pusilla* Randall & Eschmeyer, 2001, *Pseudanthias hiva* Randall & Pyle, 2001, *Apogon lativittatus* Randall, 2001, *Apogon marquesensis* Greenfield, 2001, *Ostorhinchus relativus* (Randall, 2001), *Ostorhinchus sinus* (Randall, 2001), *Pseudamiops phasma* Randall, 2001, *Chromis abrupta* Randall, 2001, *Chromis fatuhivae* Randall, 2001, *Chromis flavapicis* Randall, 2001, *Iniistius auropunctatus* Randall, Earle & Robertson 2002, *Amblyeleotris marquesas* Mohlmann & Randall, 2002, *Trimma woutsi* Winterbottom, 2002, *Engyprosopon marquisensis* Amaoka & Séret 2005, *Aseraggodes lateralis* Randall, 2005. *Stegastes lividus* (Forster 1801) was included in Randall and Earle (2002) checklist as *Stegastes* sp., but Randall (2004) determined that this endemic species was actually the *Stegastes* species described by Forster in Bloch and Schneider (1801) as *Chaetodon lividus*. *Myripristis earlei* Randall, Allen & Robertson, 2003 and *Yirrkala moorei* McCosker, 2006 have also since been described but are not restricted to the Marquesas Islands. In the same manner, six undescribed species collected during the oceanographic campaign have since been described and are endemic to the Marquesas Islands: *Eviota dorsimaculata* Tornabene, Ahmadia & Williams, 2013, *Eviota lacrimosa* Tornabene, Ahmadia & Williams, 2013, *Eviota deminuta* Tornabene, Ahmadia & Williams, 2013, *Pseudanthias oumati* Williams, Delrieu-Trottin & Planes, 2013, *Plectranthias flammeus* Williams, Delrieu-Trottin & Planes, 2013, *Apterichtus mysi* McCosker & Hibino, 2015.

Nine species were reported by Randall and Earle (2000) as undescribed endemic species and still remain to be described (*Kaupichthys* sp., *Gorgasia* sp., *Gymnapogon* sp., *Pseudamia* sp., *Trachinotus* sp., *Callogobius* sp., *Priolepis* sp., *Trimma* sp., *Arnoglossus* sp.). Our collection yielded additional specimens for some of them, but also led to the discovery of eight additional undescribed new endemic species: *Moringua* sp., *Anarchias* sp., *Gymnothorax* sp., *Apterichtus* sp., *Gnathophis* sp., *Pseudogramma* sp., *Pempheris* sp., *Trimmatom* sp.

Seven species were mentioned in Randall and Earle (2000) as described species or potentially subspecies and they represent new species endemic to the Marquesas: 1 - *Trachinocephalus* sp. reported as *Trachinocephalus myops*, is currently being described by Polenco et al.; 2 - *Macropharyngodon pakoko* Delrieu-Trottin, Williams & Planes, 2014 was originally reported as an unusual looking *Macropharyngodon meleagris* (Valenciennes, 1839); 3 - *Blenniella* sp. reported as *Blenniella gibbifrons* (Quoy & Gaimard, 1824) is under study by Delrieu-Trottin, Williams and Planes; 4 - *Istiblennius* sp. reported as *Istiblennius edentulus* is under study by J.T Williams; 5 - *Pseudogramma* sp. reported as *Pseudogramma polyacantha* (Bleeker, 1856); 6 - *Cymolutes* sp. reported as *Cymolutes torquatus* with distinct color pattern for the Marquesan populations; 7 - *Cantherhines nukuhiva* Randall, 2011 reported in Randall and Earle (2000) as *Cantherines pardalis* (Rüppell, 1837).

Due to recent taxonomic updates and revisions of several families, several species and records reported in Randall and Earle (2000) are here reported differently in this checklist: we report *Aetobatus ocellatus* (Kuhl, 1823) instead of *A. narinari* (Euphrasen, 1790) that is now restricted to the Atlantic. We report *Albula argentea* (Forster, 1801) instead of *A. forsteri* (Valenciennes, 1846), which is now a synonym. *Kyphosus ocyurus* (Jordan & Gilbert, 1882) was recorded as *Sectator ocyurus* (Jordan & Gilbert, 1882), which was transferred to *Kyphosus* (Knudsen and Clements 2013). *Centropyge fisheri* (Snyder, 1904) was reported as *C. flavicauda* Fraser-Brunner, 1933, which is a synonym. *Bodianus busellatus* Gomon, 2006 replaces *B. bilunulatus* (Lacepède, 1802) in the Marquesas (Gomon 2006). *Halichoeres claudia* Randall & Rocha, 2009 was formerly reported as *H. ornatissimus* (Garrett, 1863) which is now restricted to Hawaii (Randall and Rocha 2009). *Chlorurus spilurus* (Forsskål, 1775) was previously reported as *C. sordidus* (Forsskål 1775). The Pacific populations previously reported as *C. sordidus* belong to the distinct species *C. spilurus* (Randall 2007; Choat et al. 2012). Randall and Myers (2002) found that the Pacific goatfish populations previously reported as *Parupeneus bifasciatus* (Lacepède, 1801) were an undescribed species that they named *P. insularis* Randall & Myers, 2002. We therefore report *P. insularis* instead of *P. bifasciatus*. *Rhabdoblennius rhabdotrachelus* (Fowler & Ball, 1924) was reported as *R. ellipes* (Jordan & Starks, 1906), which is considered now as a synonym. *Fusigobius duospilus* Hoese & Reader, 1985 were previously reported as *Coryphopterus duospilus* (Hoese & Reader, 1985). *Acanthurus nigros* Günther, 1861 was reported as *Acanthurus nigroris* Valenciennes, 1835. *Acanthurus nigroris* is now restricted to Hawaii (DiBattista et al. 2011; Randall et al. 2011). *Acanthurus*

Table 1. Checklist of the Marquesan shorefish fauna. New records based on captured specimens are designated by an asterisk (*), new records based on underwater visual census are designated by a superscript (1) while records based on the Catalog of Fishes are designated by a superscript (2). Records not counted in total number of species are designated by a superscript (3). Figure numbers in bold refer to photographs in this paper.

Family or Species	Distribution
Carcharhinidae	
Carcharhinus albimarginatus (Rüppell, 1837)	Non-Endemic
Carcharhinus amblyrhynchos (Bleeker, 1856)	Non-Endemic
[1]*Carcharhinus falciformis* (Müller & Henle, 1839)	Non-Endemic
Carcharhinus limbatus (Müller & Henle, 1839)	Non-Endemic
Carcharhinus melanopterus (Quoy & Gaimard, 1824)	Non-Endemic
Galeocerdo cuvier (Péron & Lesueur, 1822)	Non-Endemic
[1]*Negaprion acutidens* (Rüppell, 1837)	Non-Endemic
Triaenodon obesus (Rüppell, 1837)	Non-Endemic
Ginglymostomatidae	
Nebrius ferrugineus (Lesson, 1831)	Non-Endemic
Sphyrnidae	
Sphyrna lewini (Griffith & Smith, 1834)	Non-Endemic
[1]*Sphyrna mokarran* (Rüppell, 1837)	Non-Endemic
Dasyatidae	
Himantura fai Jordan & Seale, 1906	Non-Endemic
Taeniurops meyeni (Müller & Henle, 1841)	Non-Endemic
Myliobatidae	
Aetobatus ocellatus (Kuhl 1823)	Non-Endemic
Mobulidae	
[1]*Manta alfredi* (Krefft, 1868)	Non-Endemic
Manta birostris (Walbaum 1792)	Non-Endemic
Megalopidae	
Megalops cyprinoides (Broussonet, 1752)	Non-Endemic
Albulidae	
Albula argentea (Forster, 1801)	Non-Endemic
Albula glossodonta (Forsskål, 1775)	Non-Endemic
Chanidae	
Chanos chanos (Forsskål, 1775)	Non-Endemic
Moringidae	
Moringua ferruginea Bliss, 1883	Non-Endemic
Moringua javanica (Kaup, 1856)	Non-Endemic
**Moringua* sp. [USNM 397080, USNM 408504, USNM 408709, USNM 408722, USNM 409523, USNM 409677]	Endemic
Chlopsidae	
Kaupichthys sp.	Endemic
Kaupichthys diodontus Schultz, 1943	Non-Endemic
Muraenidae	
Anarchias leucurus (Snyder, 1904)	Non-Endemic
Anarchias seychellensis Smith, 1962	Non-Endemic
**Anarchias* sp. [USNM 408488]	Endemic
Echidna leucotaenia (Schultz, 1943)	Non-Endemic
Echidna nebulosa (Ahl, 1789)	Non-Endemic
Echidna polyzona (Richardson, 1844)	Non-Endemic
Echidna unicolor Schultz, 1953	Non-Endemic
Enchelycore bayeri (Schultz, 1953)	Non-Endemic
Enchelycore bikiniensis (Schultz, 1953)	Non-Endemic
Enchelycore pardalis (Temminck & Schlegel, 1846)	Non-Endemic
Enchelycore schismatorhynchus (Bleeker, 1853)	Non-Endemic
Enchelynassa canina (Quoy & Gaimard, 1824)	Non-Endemic
Gymnomuraena zebra (Shaw, 1797)	Non-Endemic
Gymnothorax breedeni McCosker & Randall, 1977	Non-Endemic
Gymnothorax buroensis (Bleeker, 1857)	Non-Endemic
**Gymnothorax eurostus* (Abbott, 1860)	Non-Endemic
Gymnothorax fimbriatus (Bennett, 1832)	Non-Endemic
Gymnothorax flavimarginatus (Rüppell, 1830)	Non-Endemic
**Gymnothorax formosus* Bleeker, 1864 [USNM 409651]	Non-Endemic
**Gymnothorax fuscomaculatus* (Schultz, 1953) [USNM 408496]	Non-Endemic
Gymnothorax gracilicauda Jenkins, 1903	Non-Endemic
Gymnothorax javanicus (Bleeker, 1859)	Non-Endemic
Gymnothorax margaritophorus Bleeker, 1864	Non-Endemic
Gymnothorax melatremus Schultz, 1953	Non-Endemic
Gymnothorax meleagris (Shaw, 1795)	Non-Endemic
Gymnothorax monostigma (Regan, 1909)	Non-Endemic
Gymnothorax pictus (Ahl, 1789)	Non-Endemic
Gymnothorax prismodon Böhlke & Randall, 2000	Non-Endemic
Gymnothorax reevesii (Richardson, 1845)	Non-Endemic
Gymnothorax rueppelliae (McClelland, 1844)	Non-Endemic
**Gymnothorax shaoi* Chen & Loh, 2007 [USNM 409357, USNM 409689]	Non-Endemic
**Gymnothorax* sp. [USNM 409505]	Endemic
Gymnothorax thyrsoideus (Richardson, 1845)	Non-Endemic
Gymnothorax zonipectis Seale, 1906	Non-Endemic
Scuticaria tigrina (Lesson, 1829)	Non-Endemic
Uropterygius alboguttatus Smith, 1962	Non-Endemic
Uropterygius concolor (Rüppell, 1837)	Non-Endemic
Uropterygius fuscoguttatus Schultz, 1953	Non-Endemic
Uropterygius macrocephalus (Bleeker, 1865)	Non-Endemic
Uropterygius marmoratus (Lacepède, 1803)	Non-Endemic
Congridae	
Ariosoma multivertebratum Karmovskaya, 2004	Endemic
Conger cinereus cinereus Rüppell, 1828	Non-Endemic
**Gnathophis* sp. [USNM 409314, USNM 409315, USNM 409316]	Endemic
**Gorgasia galzini* Castle & Randall, 1999 [USNM 409324, USNM 409325, USNM 397394, USNM 405348, USNM 397096, USNM 397393, USNM 409711]	Non-Endemic
Gorgasia sp.	Endemic
Heteroconger lentiginosus Böhlke & Randall, 1981	Non-Endemic
Ophichthidae	
Apterichtus moseri (Jordan & Snyder, 1901)	Non-Endemic
Apterichtus mysi McCosker & Hibino, 2015	Endemic
**Apterichtus* sp. [USNM 409323]	Endemic
Brachysomophis crocodilinus (Bennett, 1831)	Non-Endemic
**Callechelys marmorata* (Bleeker, 1854) [USNM 409326, USNM 409713]	Non-Endemic
Callechelys randalli McCosker, 1998	Endemic
Cirrhimuraena playfairii (Günther, 1870)	Non-Endemic
Ichthyapus vulturis (Weber & de Beaufort, 1916)	Non-Endemic
Lamnastoma orientalis (McClelland, 1844)	Non-Endemic
Leiuranus semicinctus (Lay & Bennett, 1839)	Non-Endemic
[1]*Myrichthys colubrinus* (Boddaert 1781)	Non-Endemic
Myrichthys maculosus (Cuvier, 1816)	Non-Endemic
Phaenomonas cooperae Palmer, 1970	Non-Endemic
Phyllophichthus xenodontus Gosline, 1951	Non-Endemic
Schultzidia johnstonensis (Schultz & Woods, 1949)	Non-Endemic
**Myrophis microchir* (Bleeker 1864) [USNM 409322, USNM 409715]	Non-Endemic
Xestochilus nebulosus (Smith, 1962)	Non-Endemic
Yirrkala moorei McCosker, 2006	Non-Endemic
Clupeidae	
Sardinella marquesensis Berry & Whitehead, 1968	Endemic
Synodontidae	
Saurida gracilis (Quoy & Gaimard, 1824)	Non-Endemic
**Saurida nebulosa* Valenciennes, 1850 [USNM 409129, USNM 411412]	Non-Endemic
**Synodus binotatus* Schultz, 1953 [USNM 409126, USNM 409321, USNM 411375, USNM 412475, USNM 411376]	Non-Endemic
Synodus jaculum Russell & Cressey, 1978	Non-Endemic

Continued

Table 1. *Continued.*

Family or Species	Distribution
Synodus variegatus (Lacepède, 1803)	Non-Endemic
Trachinocephalus sp.	Endemic
Antennariidae	
Antennarius coccineus (Lesson, 1831)	Non-Endemic
**Antennarius nummifer* (Cuvier 1817) [USNM 409022, USNM 409252, USNM 409498, USNM 412034]	Non-Endemic
**Antennarius striatus* (Shaw 1794) [USNM 399893, USNM 409507]	Non-Endemic
**Antennatus tuberosus* (Cuvier, 1817) [USNM 420988]	Non-Endemic
Ophidiidae	
Brotula multibarbata Temminck & Schlegel, 1846	Non-Endemic
*Ophidiidae sp. [USNM 409219, USNM 409220, USNM 409285, USNM 409320]	Endemic
Ophidion exul Robins, 1991	Non-Endemic
Carapidae	
Carapus mourlani (Petit, 1934)	Non-Endemic
Onuxodon fowleri (Smith, 1955)	Non-Endemic
Belonidae	
Platybelone argalus platyura (Bennett, 1832)	Non-Endemic
Tylosurus acus melanotus (Bleeker, 1850)	Non-Endemic
Tylosurus crocodilus crocodilus (Peron & Lesueur, 1821)	Non-Endemic
Hemiramphidae	
Hemiramphus depauperatus Lay & Bennett, 1839	Non-Endemic
Hyporhamphus acutus acutus (Günther, 1872)	Non-Endemic
Holocentridae	
[3]*Myripristis cf. botche* **Figure 2**	Non-Endemic
[1]*Myripristis chryseres* Jordan & Evermann, 1903	Non-Endemic
Myripristis berndti Jordan & Evermann, 1903	Non-Endemic
Myripristis earlei Randall, Allen & Robertson, 2003	Non-Endemic
Myripristis kuntee Valenciennes, 1831	Non-Endemic
Myripristis pralinia Cuvier, 1829	Non-Endemic
[1]*Myripristis violacea* Bleeker, 1851	Non-Endemic
Myripristis vittata Valenciennes, 1831	Non-Endemic
Myripristis woodsi Greenfield, 1974	Non-Endemic
Neoniphon argenteus (Valenciennes, 1831)	Non-Endemic
Neoniphon aurolineatus (Liénard, 1839)	Non-Endemic
Neoniphon sammara (Forsskål, 1775)	Non-Endemic
Plectrypops lima (Valenciennes, 1831)	Non-Endemic
Sargocentron caudimaculatum (Rüppell, 1838)	Non-Endemic
Sargocentron diadema (Lacepède, 1802)	Non-Endemic
Sargocentron ittodai (Jordan & Fowler, 1903)	Non-Endemic
Sargocentron punctatissimum (Cuvier, 1829)	Non-Endemic
Sargocentron spiniferum (Forsskål, 1775)	Non-Endemic
Sargocentron tiere (Cuvier, 1829)	Non-Endemic
Aulostomidae	
Aulostomus chinensis (Linnaeus, 1766)	Non-Endemic
Fistulariidae	
Fistularia commersonii Rüppell, 1838	Non-Endemic
Syngnathidae	
Doryrhamphus excisus Kaup, 1856	Non-Endemic
Halicampus marquesensis Dawson, 1984	Non-Endemic
Coelonotus argulus (Peters, 1855)	Non-Endemic
Scorpaenidae	
Iracundus signifer Jordan & Evermann, 1903	Non-Endemic
**Parascorpaena mcadamsi* (Fowler, 1938) [USNM 409431, USNM 407976, USNM 404811,USNM 411000, USNM 412061, USNM 412492, USNM 412493, USNM 411525]	Non-Endemic
**Parascorpaena mossambica* (Peters, 1855) [USNM 409123, USNM 412000, USNM 411010, USNM 411013, USNM 412494]	Non-Endemic
Pterois antennata (Bloch, 1787)	Non-Endemic
Pterois volitans (Linnaeus, 1758)	Non-Endemic
Scorpaenodes guamensis (Quoy & Gaimard, 1824)	Non-Endemic
[1]*Scorpaenodes hirsutus* (Smith, 1957)	Non-Endemic
Scorpaenodes kelloggi (Jenkins, 1903)	Non-Endemic
Scorpaenodes littoralis (Tanaka, 1917)	Non-Endemic
Scorpaenodes parvipinnis (Garrett, 1863)	Non-Endemic
**Scorpaenodes quadrispinosus* Greenfield & Matsuura, 2002 [USNM 409127, 409335, USNM 412001, USNM 411005, USNM 412003, USNM 412004, USNM 411006, USNM 411008, USNM 412007, USNM 411011, USNM 411012, USNM 412450, USNM 412454]	Non-Endemic
Scorpaenopsis diabolus (Cuvier, 1829)	Non-Endemic
Scorpaenopsis macrochir Ogilby, 1910	Non-Endemic
**Scorpaenopsis possi* Randall & Eschmeyer, 2001 [USNM USNM 409048,USNM 409333, USNM 409334, USNM 404814, USNM 411018, USNM 411022, USNM 411023, USNM 411024, USNM 411025, USNM 411026, USNM 411036, USNM 411037, USNM 411038, USNM 412060, USNM 411432, USNM 411433, USNM 411434]	Non-Endemic
Scorpaenopsis pusilla Randall & Eschmeyer, 2001	Endemic
**Scorpaenopsis vittapinna* Randall & Eschmeyer, 2001 [USNM 409124]	Non-Endemic
Sebastapistes galactacma Jenkins, 1903	Non-Endemic
Sebastapistes mauritiana (Cuvier, 1829)	Non-Endemic
**Sebastapistes strongia* (Cuvier 1829) [USNM 409328, USNM 411044, USNM 412458, USNM 412459]	Non-Endemic
Sebastapistes tinkhami (Fowler, 1946)	Non-Endemic
Taenianotus triacanthus Lacepède, 1802	Non-Endemic
Platycephalidae	
Eurycephalus otaitensis (Cuvier, 1829)	Non-Endemic
Thysanophrys chiltonae (Schultz, 1953)	Non-Endemic
Caracanthidae	
Caracanthus maculatus (Gray, 1831)	Non-Endemic
Dactylopteridae	
Dactyloptena orientalis (Cuvier, 1829)	Non-Endemic
Pegasidae	
Eurypegasus draconis (Linnaeus, 1766)	Non-Endemic
Serranidae	
Aporops bilinearis Schultz, 1943	Non-Endemic
Cephalopholis argus Bloch & Schneider, 1801	Non-Endemic
Cephalopholis sexmaculata (Rüppell, 1830)	Non-Endemic
**Cephalopholis spiloparaea* (Valenciennes, 1828) [USNM 409360]	Non-Endemic
Cephalopholis urodeta (Bloch & Schneider, 1801)	Non-Endemic
Epinephelus fasciatus (Forsskål, 1775)	Non-Endemic
Epinephelus hexagonatus (Bloch & Schneider, 1801)	Non-Endemic
Epinephelus irroratus (Forster, 1801) **Figure 3**	Endemic
Epinephelus lanceolatus (Bloch, 1790)	Non-Endemic
Epinephelus macrospilos (Bleeker, 1855)	Non-Endemic
Epinephelus octofasciatus Griffin, 1926	Non-Endemic
Epinephelus polyphekadion (Bleeker, 1849)	Non-Endemic
Epinephelus tauvina (Forsskål, 1775)	Non-Endemic
Grammistes sexlineatus (Thunberg, 1792)	Non-Endemic
Plectranthias flammeus Williams, Delrieu-Trottin & Planes, 2013	Endemic
Plectranthias nanus Randall, 1980	Non-Endemic
Pogonoperca punctata (Valenciennes, 1830)	Non-Endemic
Pseudanthias hiva Randall & Pyle, 2001	Endemic
Pseudanthias oumati Williams, Delrieu-Trottin & Planes, 2013	Endemic
Pseudanthias regalis (Randall & Lubbock, 1981)	Endemic
Pseudogramma sp.	Endemic
Variola louti (Forsskål, 1775)	Non-Endemic
Kuhliidae	
Kuhlia petiti Schultz, 1943	Non-Endemic
Priacanthidae	
Heteropriacanthus cruentatus (Lacepède, 1801)	Non-Endemic

Continued

Table 1. *Continued.*

Family or Species	Distribution
Priacanthus hamrur (Forsskål, 1775)	Non-Endemic
Cirrhitidae	
Cirrhitichthys oxycephalus (Bleeker, 1855)	Non-Endemic
Cirrhitus pinnulatus (Forster *in* Bloch & Schneider, 1801)	Non-Endemic
Cyprinocirrhites polyactis (Bleeker, 1875)	Non-Endemic
[1]*Oxycirrhites typus* Bleeker, 1857	Non-Endemic
Paracirrhites forsteri (Bloch & Schneider, 1801)	Non-Endemic
Paracirrhites hemistictus (Günther, 1874)	Non-Endemic
Paracirrhites xanthus Randall, 1963	Non-Endemic
Apogonidae	
Apogon caudicinctus Randall & Smith, 1988	Non-Endemic
Apogon lativittatus Randall, 2001	Non-Endemic
Apogon marquesensis Greenfield, 2001	Endemic
Apogonichthys ocellatus (Weber, 1913)	Non-Endemic
**Apogonichthys perdix* Bleeker, 1854 [USNM 409402, USNM 409496]	Non-Endemic
Cheilodipterus quinquelineatus Cuvier, 1828	Non-Endemic
Fowleria marmorata (Alleyne & Macleay, 1876)	Non-Endemic
Gymnapogon sp.	Endemic
**Gymnapogon urospilotus* Lachner, 1953 [USNM 409278, USNM 409380, USNM 409381, USNM 405632]	Non-Endemic
*Gymnapogon vanderbilti (Fowler 1938) [USNM 404821, USNM 407188]	Non-Endemic
[1]*Lachneratus phasmaticus* Fraser & Struhsaker, 1991	Non-Endemic
Ostorhinchus apogonoides (Bleeker, 1856)	Non-Endemic
Ostorhinchus relativus (Randall, 2001) **Figure 4**	Endemic
Ostorhinchus sinus (Randall, 2001) **Figure 5**	Endemic
Pristiapogon kallopterus (Bleeker, 1856)	Non-Endemic
Pristiapogon taeniopterus (Bennett, 1836)	Non-Endemic
Pseudamia sp.	Endemic
**Pseudamiops gracilicauda* (Lachner, 1953) [USNM 409275, USNM 411071]	Non-Endemic
Pseudamiops phasma Randall, 2001	Endemic
Zapogon evermanni (Jordan & Snyder, 1904)	Non-Endemic
Malacanthidae	
Malacanthus brevirostris Guichenot, 1858	Non-Endemic
Echeneidae	
[1]*Echeneis naucrates* Linnaeus, 1758	Non-Endemic
Remora remora (Linnaeus, 1758)	Non-Endemic
Remorina albescens (Temminck & Schlegel, 1850)	Non-Endemic
Carangidae	
Alectis ciliaris (Bloch, 1787)	Non-Endemic
Carangoides orthogrammus (Jordan & Gilbert, 1881)	Non-Endemic
Caranx ignobilis (Forsskål, 1775)	Non-Endemic
Caranx lugubris Poey, 1860	Non-Endemic
Caranx melampygus (Cuvier, 1833)	Non-Endemic
Caranx papuensis Alleyne & Macleay, 1876	Non-Endemic
Caranx sexfasciatus Quoy & Gaimard, 1825	Non-Endemic
Decapterus macarellus (Valenciennes, 1833)	Non-Endemic
Elagatis bipinnulata (Quoy & Gaimard, 1825)	Non-Endemic
Gnathanodon speciosus (Forsskål, 1775)	Non-Endemic
Scomberoides lysan (Forsskål, 1775)	Non-Endemic
**Scomberoides tol* (Cuvier, 1832) [USNM 409332]	Non-Endemic
Selar crumenophthalmus (Bloch, 1793)	Non-Endemic
[1]*Seriola lalandi* Valenciennes, 1833	Non-Endemic
[1]*Seriola rivoliana* Valenciennes, 1833	Non-Endemic
Trachinotus sp.	Endemic
Uraspis secunda (Poey, 1860)	Non-Endemic
Lutjanidae	
Aphareus furca (Lacepède, 1801)	Non-Endemic
Aprion virescens Valenciennes, 1830	Non-Endemic
Lutjanus bohar (Forsskål, 1775)	Non-Endemic
Lutjanus fulvus (Forster *in* Bloch & Schneider, 1801)	Non-Endemic
Lutjanus gibbus (Forsskål, 1775)	Non-Endemic
Lutjanus kasmira (Forsskål, 1775)	Non-Endemic
Lutjanus monostigma (Cuvier, 1828)	Non-Endemic
Paracaesio sordida Abe & Shinohara, 1962	Non-Endemic
Pristipomoides zonatus (Valenciennes, 1830)	Non-Endemic
Caesionidae	
Pterocaesio marri Schultz, 1953	Non-Endemic
Pterocaesio tile (Cuvier, 1830)	Non-Endemic
Lethrinidae	
Gnathodentex aureolineatus (Lacepède, 1802)	Non-Endemic
Gymnocranius grandoculis (Valenciennes, 1830)	Non-Endemic
Lethrinus rubrioperculatus Sato, 1978	Non-Endemic
Lethrinus xanthochilus Klunzinger, 1870	Non-Endemic
Monotaxis grandoculis (Forsskål, 1775)	Non-Endemic
Mugilidae	
Planiliza macrolepis (Smith, 1846)	Non-Endemic
Planiliza melinopterus (Valenciennes, 1836)	Non-Endemic
[2]*Crenimugil crenilabis* (Forsskål, 1775)	Non-Endemic
[2]*Planiliza alata* (Steindachner, 1892)	Non-Endemic
Osteomugil engeli (Bleeker, 1858)	Non-Endemic
Crenimugil seheli (Forsskål, 1775)	Non-Endemic
Neomyxus leuciscus (Günther, 1871)	Non-Endemic
Mullidae	
Mulloidichthys flavolineatus (Lacepède, 1801)	Non-Endemic
Mulloidichthys mimicus Randall & Guézé, 1980	Non-Endemic
Mulloidichthys pfluegeri (Steindachner, 1900)	Non-Endemic
Mulloidichthys vanicolensis (Valenciennes, 1831)	Non-Endemic
Parupeneus barberinus (Lacepède, 1801)	Non-Endemic
Parupeneus ciliatus (Lacepède, 1801)	Non-Endemic
Parupeneus cyclostomus (Lacepède, 1801)	Non-Endemic
Parupeneus insularis Randall & Myers, 2002	Non-Endemic
Parupeneus multifasciatus (Quoy & Gaimard, 1825)	Non-Endemic
Parupeneus pleurostigma (Bennett, 1831)	Non-Endemic
Upeneus vittatus (Forsskål, 1775)	Non-Endemic
Pempheridae	
**Pempheris* sp. [USNM 409165, USNM 409166, USNM 409167, USNM 409276, USNM 409382, USNM 402187, USNM 402188, USNM 412388, USNM 412389, USNM 412390]	Endemic
Pempheris oualensis Cuvier, 1831	Non-Endemic
Kyphosidae	
Kyphosus bigibbus Lacepède, 1801	Non-Endemic
Kyphosus cinerascens (Forsskål, 1775)	Non-Endemic
Kyphosus vaigiensis (Quoy & Gaimard, 1825)	Non-Endemic
Kyphosus ocyurus (Jordan & Gilbert, 1882)	Non-Endemic
Chaetodontidae	
Chaetodon auriga Forsskål, 1775	Non-Endemic
Chaetodon citrinellus Cuvier, 1831	Non-Endemic
Chaetodon declivis Randall, 1975	Non-Endemic
Chaetodon ephippium Cuvier, 1831	Non-Endemic
Chaetodon lineolatus Cuvier, 1831	Non-Endemic
Chaetodon lunula (Lacepède, 1802)	Non-Endemic
**Chaetodon mertensii* Cuvier, 1831 [USNM 409160]	Non-Endemic
Chaetodon ornatissimus Cuvier, 1831	Non-Endemic
Chaetodon pelewensis Kner, 1868	Non-Endemic
Chaetodon quadrimaculatus Gray, 1831	Non-Endemic
Chaetodon reticulatus Cuvier, 1831	Non-Endemic
Chaetodon semeion Bleeker, 1855	Non-Endemic
Chaetodon trichrous Günther, 1874	Non-Endemic
Chaetodon unimaculatus Bloch, 1787	Non-Endemic
Forcipiger flavissimus Jordan & McGregor, 1898	Non-Endemic
Forcipiger longirostris Broussonet, 1782	Non-Endemic

Continued

Table 1. *Continued.*

Family or Species	Distribution
Pomacanthidae	
Centropyge fisheri (Snyder, 1904)	Non-Endemic
Centropyge flavissima (Cuvier, 1831)	Non-Endemic
Centropyge loricula (Günther, 1874)	Non-Endemic
Centropyge nigriocella* Woods & Schultz, 1953 [USNM 409156, USNM 409157, USNM 409158] **Figure 6	Non-Endemic
Paracentropyge multifasciata* (Smith & Radcliffe, 1911) [USNM 409443] **Figure 6	Non-Endemic
Pomacentridae	
Abudefduf conformis Randall & Earle, 2000 **Figure 7**	Endemic
Abudefduf sordidus (Forsskål, 1775)	Non-Endemic
Chromis abrupta Randall, 2001	Endemic
Chromis fatuhivae Randall, 2001	Endemic
Chromis flavapicis Randall, 2001 **Figure 7**	Endemic
Chromis leucura Gilbert, 1905	Non-Endemic
Chromis viridis (Cuvier, 1830)	Non-Endemic
Chromis xanthura (Bleeker, 1854)	Non-Endemic
Chrysiptera brownriggii (Bennett, 1828)	Non-Endemic
Dascyllus aruanus (Linnaeus, 1758)	Non-Endemic
Dascyllus strasburgi Klausewitz, 1960 **Figure 8**	Endemic
Lepidozygus tapeinosoma (Bleeker, 1856)	Non-Endemic
Plectroglyphidodon dickii (Liénard, 1839)	Non-Endemic
Plectroglyphidodon johnstonianus Fowler & Ball, 1924	Non-Endemic
Plectroglyphidodon lacrymatus (Quoy & Gaimard, 1825)	Non-Endemic
Plectroglyphidodon leucozonus (Bleeker, 1859)	Non-Endemic
Plectroglyphidodon phoenixensis (Schultz, 1943)	Non-Endemic
Plectroglyphidodon sagmarius Randall & Earle, 2000 **Figure 9**	Endemic
Pomacentrus coelestis Jordan & Starks, 1901	Non-Endemic
Stegastes aureus (Fowler, 1927)	Non-Endemic
Stegastes lividus (Forster, 1801)	Endemic
Labridae	
Anampses caeruleopunctatus Rüppell, 1828	Non-Endemic
Anampses melanurus Bleeker, 1857	Non-Endemic
Bodianus busellatus Gomon, 2006	Non-Endemic
Bodianus axillaris (Bennett, 1831)	Non-Endemic
[1]Cheilio inermis (Forsskål, 1775)	Non-Endemic
Cheilinus chlorourus (Bloch, 1791)	Non-Endemic
Cheilinus oxycephalus Bleeker, 1853	Non-Endemic
**Cheilinus trilobatus* Lacepède, 1801 [USNM 409210]	Non-Endemic
Coris hewetti Randall, 1999	Endemic
Coris marquesensis Randall, 1999	Endemic
Cymolutes sp.	Endemic
Gomphosus varius Lacepède, 1801	Non-Endemic
Halichoeres claudia Randall & Rocha, 2009	Non-Endemic
[1]Halichoeres margaritaceus (Valenciennes, 1839)	Non-Endemic
Halichoeres melasmapomus Randall, 1980	Non-Endemic
Hemigymnus fasciatus (Bloch, 1792)	Non-Endemic
Iniistius auropunctatus Randall, Earle & Robertson, 2002	Endemic
Iniistius pavo (Valenciennes, 1840)	Non-Endemic
Labroides bicolor Fowler & Bean, 1928	Non-Endemic
Labroides dimidiatus (Valenciennes, 1839)	Non-Endemic
Labroides rubrolabiatus Randall, 1958	Non-Endemic
Macropharyngodon pakoko Delrieu-Trottin, Williams & Planes, 2014 **Figure 10**	Endemic
Novaculichthys taeniourus (Lacepède, 1801)	Non-Endemic
Oxycheilinus bimaculatus (Valenciennes, 1840)	Non-Endemic
Oxycheilinus unifasciatus Streets, 1877	Non-Endemic
Pseudocheilinus octotaenia Jenkins, 1901	Non-Endemic
Pseudodax moluccanus (Valenciennes, 1839)	Non-Endemic
Pseudojuloides pyrius Randall & Randall, 1981 **Figure 11**	Endemic
Stethojulis marquesensis Randall, 2000 **Figure 12**	Endemic
Thalassoma amblycephalum (Bleeker, 1856)	Non-Endemic
Thalassoma lutescens (Lay & Bennett, 1839)	Non-Endemic
Thalassoma purpureum (Forsskål, 1775)	Non-Endemic
Thalassoma quinquevittatum (Lay & Bennett, 1839)	Non-Endemic
Thalassoma trilobatum (Lacepède, 1801)	Non-Endemic
Wetmorella nigropinnata (Seale, 1900)	Non-Endemic
Scaridae	
Calotomus carolinus (Valenciennes, 1839)	Non-Endemic
Chlorurus microrhinos (Bleeker, 1854)	Non-Endemic
Chlorurus spilurus (Valenciennes, 1840)	Non-Endemic
[1]Scarus forsteni (Bleeker, 1861)	Non-Endemic
Scarus koputea Randall & Choat, 1980	Endemic
Scarus psittacus Forsskål, 1775	Non-Endemic
Scarus rubroviolaceus Bleeker, 1849	Non-Endemic
Pinguipedidae	
[1]Parapercis millepunctata (Günther, 1860)	Non-Endemic
Parapercis schauinslandii (Steindachner, 1900)	Non-Endemic
Creediidae	
**Chalixodytes tauensis* Schultz, 1943 [USNM 405635, USNM 404800, USNM 411405]	Non-Endemic
**Crystallodytes enderburyensis* Schultz, 1943 [USNM 409397, USNM 409467, USNM 409468, USNM 409469, USNM 412179, USNM 411404, USNM 412502]	Non-Endemic
**Limnichthys nitidus* Smith, 1958 [USNM 409352, USNM 409353, USNM 412342, USNM 412343]	Non-Endemic
Tripterygiidae	
Enneapterygius rhabdotus Fricke, 1994	Non-Endemic
Blenniidae	
Alticus simplicirrus Smith-Vaniz & Springer, 1971 **Figure 13**	Endemic
Aspidontus taeniatus Quoy & Gaimard, 1834	Non-Endemic
Blenniella caudolineata (Günther, 1877)	Non-Endemic
Blenniella paula (Bryan & Herre, 1903)	Non-Endemic
Blenniella sp.	Endemic
Cirripectes quagga (Fowler & Ball, 1924)	Non-Endemic
**Cirripectes* sp. [USNM 409139, USNM 409140]	Non-Endemic
Cirripectes variolosus (Valenciennes, 1836)	Non-Endemic
Ecsenius midas Starck, 1969	Non-Endemic
Enchelyurus ater (Günther, 1877)	Non-Endemic
Entomacrodus corneliae (Fowler, 1932) **Figure 14**	Endemic
Entomacrodus macrospilus Springer, 1967 **Figure 14**	Endemic
Entomacrodus randalli Springer, 1967 **Figure 14**	Endemic
Exallias brevis (Kner, 1868)	Non-Endemic
Istiblennius bellus (Günther, 1861)	Non-Endemic
Istiblennius sp.	Endemic
Plagiotremus rhinorhynchos (Bleeker, 1852)	Non-Endemic
Plagiotremus tapeinosoma (Bleeker, 1857)	Non-Endemic
Rhabdoblennius rhabdotrachelus (Fowler & Ball, 1924)	Non-Endemic
Callionymidae	
Callionymus marquesensis Fricke, 1989	Endemic
Callionymus simplicicornis Valenciennes, 1837	Non-Endemic
Synchiropus ocellatus (Pallas, 1770)	Non-Endemic
Gobiidae	
Amblyeleotris marquesas Mohlmann & Randall, 2002 **Figure 15**	Endemic
Amblygobius nocturnus (Herre, 1945)	Non-Endemic
Bathygobius coalitus (Bennett, 1832)	Non-Endemic
Bathygobius cocosensis (Bleeker, 1854)	Non-Endemic
Bathygobius cotticeps (Steindachner, 1880)	Non-Endemic
Bryaninops yongei (Davis & Cohen, 1969)	Non-Endemic
Callogobius sp.	Endemic
Discordipinna griessingeri Hoese & Fourmanoir, 1978	Non-Endemic
Eviota deminuta Tornabene, Ahmadia & Williams, 2013	Endemic

Continued

Table 1. *Continued.*

Family or Species	Distribution
Eviota dorsimaculata Tornabene, Ahmadia & Williams, 2013	Endemic
Eviota infulata (Smith, 1957)	Non-Endemic
Eviota lacrimosa Tornabene, Ahmadia & Williams, 2013	Endemic
Fusigobius duospilus Hoese & Reader, 1985	Non-Endemic
**Fusigobius inframaculatus* (Randall, 1994) [USNM 409011, USNM 409012]	Non-Endemic
**Gnatholepis anjerensis* (Bleeker, 1851) [USNM 412070, USNM 412083, USNM 412256, USNM 412257]	Non-Endemic
Gnatholepis cauerensis (Bleeker, 1853)	Non-Endemic
Kelloggella tricuspidata (Herre, 1935)	Endemic
Paragobiodon echinocephalus (Rüppell, 1828)	Non-Endemic
Pleurosicya mossambica Smith, 1959	Non-Endemic
**Priolepis ailina* Winterbottom & Burridge, 1993 [USNM 409428, USNM 411293, USNM 411294]	Non-Endemic
Priolepis compita Winterbottom, 1985	Non-Endemic
Priolepis nocturna Smith, 1957	Non-Endemic
Priolepis semidoliata (Valenciennes, 1837)	Non-Endemic
Priolepis sp. [USNM 409437]	Endemic
Priolepis squamogena Winterbottom & Burridge, 1989	Non-Endemic
**Priolepis triops* Winterbottom & Burridge, 1993 [USNM 409362, USNM 409447, USNM 409448, USNM 411087, USNM 411059, USNM 411279, USNM 411280, USNM 411281]	Non-Endemic
Stonogobiops medon Hoese & Randall, 1982 **Figure 16**	Endemic
**Trimma* sp. [USNM 409435, USNM 409436, USNM 409438, USNM 409439, USNM 409440]	Endemic
Trimma woutsi Winterbottom, 2002	Endemic
**Trimmatom* sp. [USNM 409434]	Endemic
Valenciennea helsdingenii (Bleeker, 1858)	Non-Endemic
Valenciennea strigata (Broussonet, 1782)	Non-Endemic
Vanderhorstia ornatissima Smith, 1959	Non-Endemic
Xenisthmidae	
**Xenisthmus polyzonatus* (Klunzinger, 1871) [USNM 409131, USNM 409132, USNM 411054, USNM 412524, USNM 412525, USNM 412526]	Non-Endemic
Microdesmidae	
Gunnellichthys monostigma Smith, 1958	Non-Endemic
Nemateleotris magnifica Fowler, 1938)	Non-Endemic
Ptereleotris heteroptera (Bleeker, 1855)	Non-Endemic
Ptereleotris melanopogon Randall & Hoese, 1985 **Figure 17**	Endemic
Ptereleotris zebra (Fowler, 1938)	Non-Endemic
Sphyraenidae	
Sphyraena barracuda (Edwards, 1771)	Non-Endemic
Sphyraena forsteri Cuvier, 1829	Non-Endemic
Sphyraena helleri Jenkins, 1901	Non-Endemic
Sphryaena qenie Klunzinger, 1870	Non-Endemic
Gempylidae	
Promethichthys prometheus (Cuvier, 1832)	Non-Endemic
Scombridae	
Acanthocybium solandri (Cuvier, 1831)	Non-Endemic
Euthynnus affinis (Cantor, 1849)	Non-Endemic
Gymnosarda unicolor (Rüppell, 1838)	Non-Endemic
Zanclidae	
Zanclus cornutus (Linnaeus, 1758)	Non-Endemic
Acanthuridae	
Acanthurus achilles (Shaw, 1803)	Non-Endemic
**Acanthurus blochii* Valenciennes 1835 [USNM 409483]	Non-Endemic
Acanthurus guttatus Forster, 1801	Non-Endemic
[1]*Acanthurus leucopareius* (Jenkins, 1903)	Non-Endemic
Acanthurus lineatus (Linnaeus, 1758)	Non-Endemic
Acanthurus mata (Cuvier, 1829)	Non-Endemic
Acanthurus nigricans (Linnaeus, 1758)	Non-Endemic
Acanthurus nigros Günther, 1861	Non-Endemic
**Acanthurus nubilus* (Fowler & Bean, 1929) [USNM 409451]	Non-Endemic
Acanthurus pyroferus Kittlitz, 1834	Non-Endemic
Acanthurus reversus Randall & Earle, 1999	Endemic
Acanthurus thompsoni (Fowler, 1923)	Non-Endemic
Acanthurus triostegus (Linnaeus, 1758)	Non-Endemic
Acanthurus xanthopterus Valenciennes, 1835	Non-Endemic
Ctenochaetus flavicauda Fowler, 1938	Non-Endemic
Ctenochaetus hawaiiensis Randall, 1955	Non-Endemic
Ctenochaetus marginatus (Valenciennes, 1835)	Non-Endemic
Naso annulatus (Quoy & Gaimard, 1825)	Non-Endemic
Naso brachycentron (Quoy & Gaimard, 1825)	Non-Endemic
Naso brevirostris (Valenciennes, 1835)	Non-Endemic
Naso hexacanthus (Bleeker, 1855)	Non-Endemic
Naso lituratus (Bloch & Schneider, 1801)	Non-Endemic
Naso unicornis (Forsskål, 1775)	Non-Endemic
[1]*Naso vlamingii* (Valenciennes, 1835)	Non-Endemic
[1]*Zebrasoma velifer* (Bloch, 1795)	Non-Endemic
Zebrasoma rostratrum (Günther, 1873)	Non-Endemic
Siganidae	
Siganus argenteus (Quoy & Gaimard, 1825)	Non-Endemic
Bothidae	
Arnoglossus sp.	Endemic
Bothus mancus (Broussonet, 1782)	Non-Endemic
Bothus pantherinus (Rüppell, 1830)	Non-Endemic
Engyprosopon marquisensis Amaoka & Séret, 2005	Endemic
Samaridae	
Samariscus triocellatus Woods, 1966	Non-Endemic
Soleidae	
Aseraggodes lateralis Randall, 2005	Endemic
Balistidae	
Balistapus undulatus (Park, 1797)	Non-Endemic
Balistes polylepis Steindachner, 1877	Non-Endemic
Balistoides viridescens (Bloch & Schneider, 1801)	Non-Endemic
Melichthys niger (Bloch, 1786)	Non-Endemic
Melichthys vidua (Solander, 1844)	Non-Endemic
Odonus niger (Rüppell, 1829)	Non-Endemic
Rhinecanthus aculeatus (Linnaeus, 1758)	Non-Endemic
Rhinecanthus rectangulus (Bloch & Schneider, 1801)	Non-Endemic
Sufflamen bursa (Bloch & Schneider, 1801)	Non-Endemic
Sufflamen fraenatus (Latreille, 1804)	Non-Endemic
**Xanthichthys auromarginatus* (Bennett, 1832) [USNM 409459]	Non-Endemic
Xanthichthys caeruleolineatus Randall, Matsuura & Zama, 1978	Non-Endemic
Monacanthidae	
Aluterus scriptus (Osbeck, 1765)	Non-Endemic
Cantherines dumerilii (Hollard, 1854)	Non-Endemic
Cantherhines nukuhiva Randall, 2011 **Figure 18**	Endemic
Pervagor marginalis Hutchins, 1986 **Figure 19**	Non-Endemic
Ostraciidae	
Lactoria cornuta (Linnaeus, 1758)	Non-Endemic
Ostracion cubicus Linnaeus, 1758	Non-Endemic
Ostracion meleagris (Bloch & Schneider, 1801)	Non-Endemic
Ostracion whitleyi Fowler, 1931	Non-Endemic
Tetraodontidae	
Arothron hispidus (Linnaeus, 1758)	Non-Endemic
Arothron meleagris (Bloch & Schneider, 1801)	Non-Endemic
Arothron stellatus (Bloch & Schneider, 1801)	Non-Endemic
Canthigaster amboinensis (Bleeker, 1865)	Non-Endemic
Canthigaster criobe* Williams, Delrieu-Trottin & Planes, 2012 [USNM 409168] **Figure 20	Non-Endemic
Canthigaster janthinoptera (Bleeker, 1855)	Non-Endemic
Canthigaster marquesensis Allen & Randall, 1977 **Figure 21**	Endemic
Diodontidae	
Diodon hystrix Linnaeus, 1758	Non-Endemic

Figure 2. *Myripristis cf botche*. Photographed by Yves Lefèvre at -65 m, this *Myripristis* is closest to *Myripristis blotche.*

Figure 3. *Epinephelus irroratus*. Photo: Philippe Bacchet.

Figure 4. *Ostorhinchus relativus*. Photo: Yann Hubert.

Figure 5. *Ostorhinchus sinus* (89mm SL). Photo: Jeffrey T. Williams.

triostegus (Linnaeus, 1758) was reported as *Acanthurus triostegus marquesensis* Schultz & Woods, 1948, which is now a synonym. *Coelonotus argulus* (Peters, 1855) was reported as *Microphis argulus* (Peters, 1855), which is now a synonym. The reports of *Apterichtus flavicaudus* (Snyder, 1904) and *A. moseri* (Jordan & Snyder, 1901) were based on misidentifications of *A. mysi* McCosker & Hibino, 2015 and *A. klazingai* (Weber, 1913) (J.E. McCosker, personal communication). *Apterichtus moseri* is now restricted to Japan while *A. flavicaudus* is restricted to Hawaii, Midway Island, and possibly Australia and Seychelles (McCosker and Hibino 2015). For Mugilidae, we followed Durand et al. (2012) and report *Planiliza macrolepis* (Smith, 1846) instead of *Chelon macrolepis* (Smith, 1846); *Planiliza melinopterus* (Valenciennes, 1836) instead of *Chelon melinopterus* (Valenciennes, 1836); *Planiliza alata* (Steindachner, 1892) instead of *Liza alata* (Steindachner, 1892); *Osteomugil engeli* (Bleeker, 1858) instead of *Moolgarda engeli* (Bleeker, 1858); *Crenimugil seheli* (Forsskål, 1775) instead of *Moolgarda seheli* (Forsskål, 1775).

Gobiidae (11 endemic species), Labridae (7), Pomacentridae (7), Serranidae (6), Apogonidae (6) and Blenniidae (6) are the families that possess the highest number of endemic species and among the highest percentage of endemism with respectively 33.3%, 20.0%, 33.3%, 27.3%, 30.0% and 31.6%. They are only surpassed by Clupeidae and Soleidae that have a single

Figure 6. *Paracentropyge multifasciata* (58 mm SL, top), *Centropyge nigriocella* (36 mm SL, bottom). Photos: Jeffrey T. Williams.

Figure 7. Two endemic species to the Marquesas Islands: *Chromis flavapicis* (black) and *Abudefduf conformis* (striped). *Chaetodon trichrous* (half black, half white and yellow tail) is endemic to French Polynesia. Photo: Yann Hubert

Figure 8. *Dascyllus strasburgi* finding shelter in a *Pocillopora* sp. colony. Photo: Yann Hubert.

Figure 9. *Plectroglyphidodon sagmarius*. Photo: Yann Hubert.

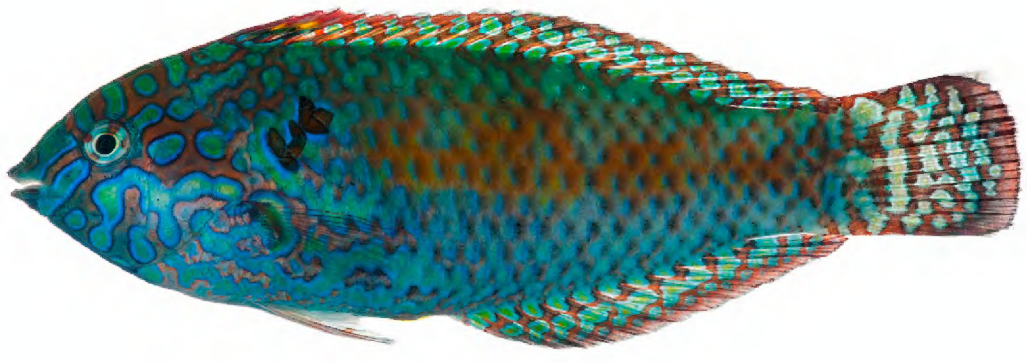

Figure 10. *Macropharyngodon pakoko* (male, 72 mm SL). Photo: Jeffrey T. Williams.

Figure 11. *Pseudojuloides pyrius* (32 mm SL). Photo: Jeffrey T. Williams.

represented species endemic from the Marquesas (100% of endemism), and Congridae, Bothidae, Chlopsidae, Pempheridae (50%), all of them represented by no more than six species in total in the Marquesas. Among the five most speciose families; the percentage of endemism observed is uneven with 5.0% for Muraenidae, 20.0% for Labridae, 33.3% for Gobiidae, 3.9% for Acanthuridae and 27.3% for Serranidae.

Figure 12. *Stethojulis marquesensis* (84 mm SL). Photo: Jeffrey T. Williams.

Figure 13. *Alticus simplicirrus.* Photo: Philippe Bacchet.

Figure 14. From top to bottom*: Entomacrodus corneliae* (40 mm SL), *E. macrospilus* (19 mm SL), *E. randalli* (109 mm SL). Photos: Jeffrey T. Williams.

Figure 15. *Amblyeleotris marquesas* (69 mm SL). Photo: Jeffrey T. Williams.

DISCUSSION

Percentage of endemism is dependant on our level of knowledge of the locality in question but also of the surrounding islands and archipelagos. While remote places like Hawaii tend to lose percentage of endemism due to new records of widespread fishes in their waters, the Marquesas constitutes one of the rare places where both the number of widespread and endemic fishes have grown despite continuous explorations of islands around it; with 10% of endemism in 1976, 1978 (Randall 1976, 1998); 11.6% in 2000 (Randall and Earle 2000), 12.3% (8.3% identified endemics + 4% unidentified) in 2007 (Kulbicki 2007), while Williams et al. (2013) evoked 12.9% of endemism based on a preliminary analysis of the collection presented in this study.

Fifteen years ago, the Marquesas were reported to be one of the few hotspots of endemism in the Indo-Pacific for shore reef fishes (Randall and Earle 2000). This percentage is presently at its highest level ever with 13.7%. This census of the Marquesan fish biodiversity constitutes a baseline that is essential to ensure the future protection of these islands. A plan to set up a

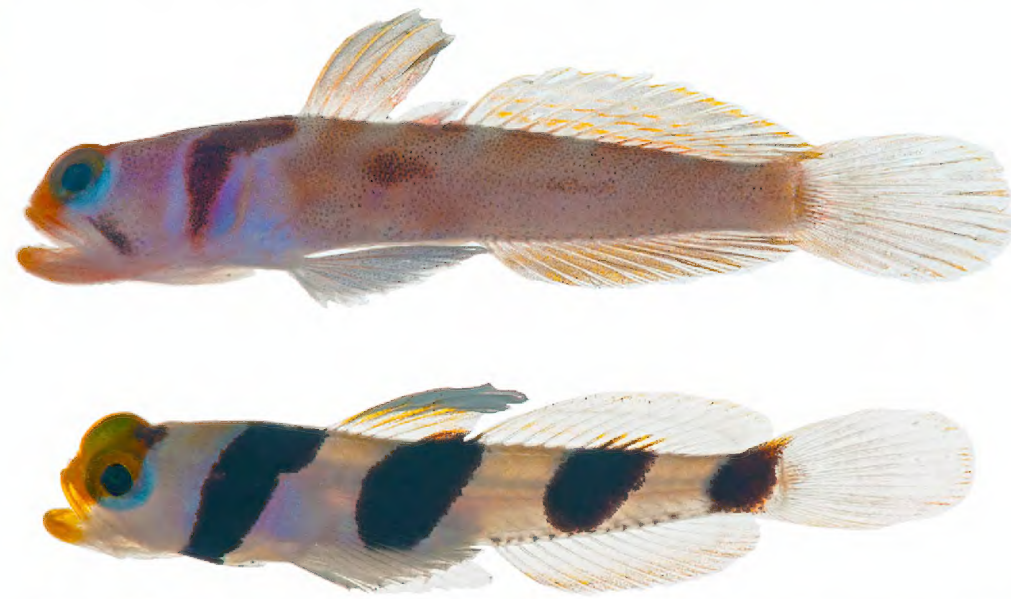

Figure 16. *Stenogobiops medon* adult (19 mm SL, top) and juvenile (bottom, 15 mm SL). Photos: Jeffrey T. Williams.

Figure 17. *Ptereleotris melanopogon* (76 mm SL). Photo: Jeffrey T. Williams.

Figure 18. *Cantherhines nukuhiva* (160 mm SL). Photo: Jeffrey T. Williams.

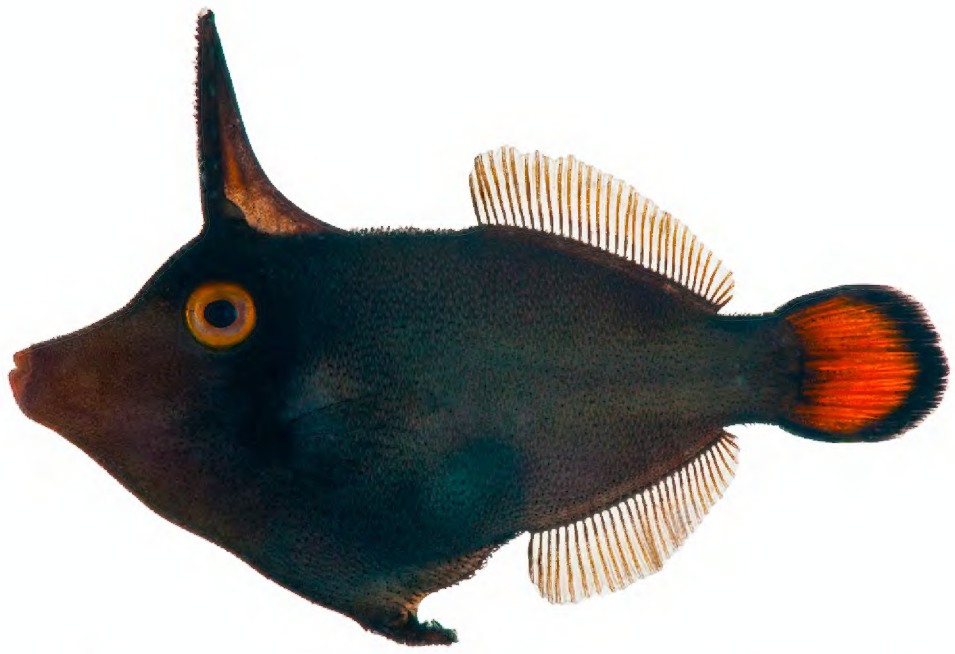

Figure 19. *Pervagor marginalis* (46 mm SL). Photo: Jeffrey T. Williams.

Figure 20. *Canthigaster criobe* (44 mm SL). Photo: Jeffrey T. Williams.

Marine Protected Area is in progress for the Marquesas Islands. Our study highlights the uniqueness of the Marquesan reef fish fauna and emphasizes the necessity to preserve the reef fish fauna of the archipelago, possessing the third highest percentage of endemism in the Indo-Pacific.

ACKNOWLEDGEMENTS

This study was part of the Pakaihi I Te Moana expedition organized and funded by the Agence des Aires Marines Protégées in France. We thank the Centre Plongée Marquises (Xavier (Pipapo) and Marie Curvat), l'Agence des Aires Marines Marine Protégées, the Fondation TOTAL, the Ministère de l'Environnement de Polynésie, the Délégation à la Recherche Polynésie, the Mairie of Nuku-Hiva, and the people of the Marquesas Islands for their kind and generous support of the project as we traveled throughout the islands. Particular thanks go to the Captain and crew of the M/V "Braveheart" for their invaluable assistance during the Marquesas Expedition. We thank Jerry Finan, Diane Pitassy, Erika Wilbur, Shirleen Smith, Kris Murphy, David Smith and Sandra Raredon of the Division of Fishes (National Museum of Natural History) for assistance in preparations for the trip and processing specimens. We are also grateful to Tom Cribb, and Pierre Sasal for their field assistance collecting fishes in the Marquesas. We thank the staff of the CRIOBE for logistical support, particularly Yannick Chancerelle for his assistance with arrangements for shipments into and out of French Polynesia. The second author's travel to Moorea to participate in the expedition was funded by grants from the Leonard P. Schultz Fund (Division of Fishes, National Museum of Natural History). We thank Bruce Mundy and an anonymous reviewer for providing constructive reviews of an earlier version of the manuscript.

Figure 21. *Canthigaster marquesensis.* Photo: Yann Hubert.

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Authors' contribution statement: ED-T, JTW, PB, MK, JM, RG, TLL, GM-T, GS, SP collected the data, ED-T, JTW, MK, JM, RG, GS, SP analyzed the data, ED-T, JTW, MK, JM, RG, GS, SP wrote and commented on the text.

Received: 29 May 2015
Accepted: 11 September 2015
Academic editor: Osmar J. Luiz